UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,619	02/05/2001	Motoyuki Hirata	Q62599	8354

7590 12/18/2002

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037-3213

EXAMINER
LORENGO, JERRY A

ART UNIT	PAPER NUMBER
1734	3

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/775,619	Applicant(s) HIRATA ET AL.	
	Examiner Jerry A. Lorengo	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) *17-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

(1)

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 08/01/1996. It is noted, however, that applicant has not filed a certified copy of the 08-203810 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 17, 18, 30 and 31 disclose a battery obtained by a method. The method, however, discloses the steps required to form an impregnated electrode, which is but one component of a battery. Clarification is required. The dependent claims are likewise rejected due to their dependency upon rejected base claims 17, 18, 30 and 31.

(3)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 17-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,858,264 to Ichino et al.

Regarding applicant claims 17 and 30, Ichino et al. disclose a method of forming an electrode for use in a battery comprising the steps of:

(1) Providing a composite of a thin film shaped porous electrode and a solid polymer electrolyte film obtained by:

a) Providing a film-shaped porous electrode (porous membrane) of PTFE;

b) Providing a polymerizable electrolyte film which is convertible to a solid or pre-solid polymer electrolyte upon polymerization; and

c) Reducing pressure inside of the porous electrode by vacuum to fix the polymerizable compound to the porous electrode (column 7, lines 45-57); and

(2) Impregnating the composite with an ion-conductive solution (electrolyte).

Regarding applicant claims 18 and 31, Ichino et al. disclose a method of forming an electrode for use in a battery comprising the steps of:

(1) Providing a composite of a thin film shaped porous electrode and a solid polymer electrolyte film obtained by:

a) Providing a film-shaped porous electrode (porous membrane) of PTFE;

b) Coating a polymerizable electrolyte film which is convertible to a solid or pre-solid polymer electrolyte upon polymerization; and

c) Reducing pressure inside of the porous electrode by vacuum to impregnate the polymerizable compound into and onto the porous electrode (column 5, lines 1-22); and

(2) Impregnating the composite with an ion-conductive solution (electrolyte).

Although Ichino et al. discloses, as per applicant claims 17, 18, 30 and 31, that the porous electrode is impregnated with the electrolyte, they do not specifically disclose that the impregnation proceeds under reduced pressure. Nonetheless, it would have been obvious to one of ordinary sill in the art at the time of invention that the electrolyte impregnation could have occurred under vacuum motivated by the fact that the skilled artisan and Ichino et al. disclose that vacuum impregnation, at least with regards to the use of the polymerizable electrolyte film, enable the material to be introduced more efficiently and completely into the structure.

Although Ichino et al. disclose, as per applicant claims 19, 20, 30 and 31, that the polymer electrolyte film is obtained by polymerizing a composition comprising a solvent having a polymerizable component dissolved therein (column 5, lines 5-14), they do not specifically disclose, as per applicant claims 30 and 31, that the composite porous electrode with an electrolytic solution has a concentration of an electrolyte salt greater than a concentration at which the electrolytic solution has a maximum conductivity. Nonetheless, the skilled artisan would have appreciated that the ion conductivity would be increased motivated by the fact that Ichino et al. discloses that introduction of the electrolytic solution into the polymer electrolyte constituent of the porous electrode composite causes it to swell a. Therefore, it would have a greater concentration than the electrolytic solution has at its maximum conductivity, i.e., at maximum saturation, because the polymer electrolyte is capable of swelling and entraining a higher concentration of electrolyte salt and thus exhibit a concentration and conductivity higher than that achievable by a saturated electrolytic solution alone.

Regarding applicant claims 21 and 22, Ichino et al. disclose that the ion conductivity of the polymer electrolyte film is greater than 10^{-6} S/cm at room temperature (column 4, lines 60-65; column 6, lines 61 to column 7, line 3).

Regarding applicant claims 23, 24 and 25, Ichino et al. disclose that the polymerizable compound coated on the porous electrode may comprise methyl acrylate (column 4, line 36); a material that has a urethane bond and an oxyalkylene group.

Regarding applicant claims 26 and 27, Ichino et al. disclose that the solid polymer electrolyte film may contain no electrolyte salt until it has been impregnated with such after being coated into and onto the porous electrode film (column 5, lines 1-14).

Regarding applicant claims 28, 29, 32 and 33, Ichino et al. disclose that the polymerizable compound (film or coating) introduced into and onto the porous electrode may be compounded with an electrolyte salt prior to impregnating it into the porous electrode under vacuum followed by polymerization by curing (column 5, lines 19-36).

(4)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry A. Lorengo whose telephone number is (703) 306-9172. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7115 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

J.A. Lorengo
Primary Examiner
AU 1734
December 9, 2002